

Part A. PERSONAL INFORMATION

CV date

7-01-2021

First and Family name	Joaquín Ariño Carmona		
Social Security, Passport, ID number	37273798K	Age	63
Researcher codes	Open Researcher and Contributor ID (ORCID**)	0000-0002-6774-2987	
	SCOPUS Author ID (*)		
	WoS Researcher ID (*)	D-3756-2011	

(*) *Optional*

(**) *Mandatory*

A.1. Current position

Name of University/Institution	Universitat Autònoma Barcelona		
Department	Inst. de Biotecnologia y Biomedicina / Dept. Bioquímica y Biol. Mol.		
Address and Country	Ed. IBB, Campus UAB, Cerdany. Vallès 08193, Barcelona, Spain		
Phone number	935811315	E-mail	Joaquin.arino@uab.es
Current position	Catedrático de Universidad	From	1993
Key words	Stress response, gene expression, recombinant protein production, ion homeostasis, protein phosphorylation, protein phosphatases		

A.2. Education

PhD, Licensed, Graduate	University	Year
Licenciado con Grado en Farmacia	Universidad de Barcelona	1981
OhD in Biochemistry	Universidad de Barcelona	1986

A.3. General indicators of quality of scientific production (see instructions)

Number of research "sexenios": 6 (last one ended in 31-12-2017)

PhD supervised in the last 10 years: 11 (+ 2 ongoing)

Total citations (WoS): 5701 (at 07-01-2021). H-index: 40

Total citations (2015-2019): 2120. Average citations/yr (2015-2019): 424

Total number of scientific publications: 162 (150 papers and reviews + 12 book chapters), of which **92 as first or last author**.

Total number of scientific publications in Q1 (JCR): 116

Publications in 2015-2019: 27 (+ 2 book chapters)

Publications since January 1st-2010: 56 (41 in Q1) + 3 book chapters

Part B. CV SUMMARY (max. 3500 characters, including spaces)

PhD in Biochemistry from the Univ. of Barcelona, under Joan J. Guinovart supervision, I did my postdoctoral stage at the U. Massachusetts, cloning and characterizing for the first time the two isoforms of human protein phosphatase 2A (PP2A). Once back at UAB in 1988, as an established researcher, I explored the space of protein phosphatases in the yeast *Saccharomyces cerevisiae*, my main working model since then, discovering two new phosphatases: Ppz1 and Ppg1 (2 JBCs). As a pioneering researcher in automated DNA sequencing, during the 1990s we cloned and characterized multiple cDNAs and Ser / Thr phosphatases (PPX, PP2A) genes, mainly in plants. I also participated in the sequencing of the yeast genome (chromosome XV, Nature). Also, during this period, we delved into the function and regulation of Ppz1 phosphatase, discovering that it was a key element in the regulation of salt tolerance and that it was negatively regulated by Hal3. In 2004, we discovered a second negative regulator of Ppz1, Vhs3 (4 JBC, 1 PNAS, 1 MCB). Likewise, we characterize the Ppz of *S. pombe* and *N. crassa*. A key contribution of the group was the publication in 2009 that Hal3 and Vhs3 are moonlighting proteins, since in addition to being Ppz1 regulators, they act as components of an enzyme (PPC decarboxylase) that is key in CoA biosynthesis (Nat. Chem Biol). We then further investigated the interaction between *S. cerevisiae* Ppz1 and Hal3, and characterized Ppz1 (and Hal3) in animal and plant pathogenic fungi (*C. albicans*, *Aspergillus*, *Cryptococcus*, and *Ustilago*), as well as the extraordinary



structure of Hal3 in *S. pombe* (1 JBC, 1 BJ, 5 Mol Microbiol, 3 Sci Reports, 1 PLOS Pathogens, among others).

Relevant for this proposal, at the beginning of 2000 we became interested in signaling in yeast in response to stress by Na⁺ and by alkalization of the medium. Between 2000-2003, in addition to delimiting the transcriptional response mediated by Hog1 in response to saline stress, we discovered that alkaline stress promotes the entry of calcium and the activation of the calcineurin pathway (2 JBC, 1 Mol. Microbiol). Later, we have characterized the role of the cell wall integrity (CWI) pathway, copper and iron homeostasis, and the Snf1 and PKA kinase pathways in the adaptive response to alkaline pH (2 JBC, 2 Biochem J). Also, from the middle of 2000 and until recently we carried out the characterization of another family of phosphatases, the PP2Cs. We studied their role in salt tolerance and analyzed the transcriptomic and functional profile of several isoforms (Ptc1-5), establishing their cellular targets. (2 Mol Microbiol, 1 JBC, 1 MCB, 1 Genetics). In recent years, as coordinator of an international consortium, we have applied systems biology approaches to the study of monovalent cation homeostasis, which places us among the reference groups at the European level on the subject (1 MCB, 2 Mol Microbiol., 1 BBA, 1 Sci. Reports, 1 Env Microbiol, 1 Euk Cell, 1 BMC Genomics, 1 PLOS Comp Biol, 1 Mol Biol Microbiol Rev, 1 Adv Microb Physiol).

In summary, this is a scientific trajectory strongly linked to the study of cell signaling processes controlled by phospho-dephosphorylation, within the context of gene expression in response to cation and pH stress. In the last two years we have initiated collaborations with several companies to provide them with support in heterologous protein expression with industrial purposes.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications- (corresponding author in all listed publications)

- 1.- Velázquez, D.; Albacar, M.; Zhang, C.; ... & Ariño, J. (2020) Yeast Ppz1 protein phosphatase toxicity involves the alteration of multiple cellular targets. **Sci. Rep.**, 10, 15613 (1-21). – 12 authors
- 2.- Zhang, C.; García-Rodas, R.; Molero, C.; de Oliveira, H.C.; Taberero, L.; Reverter, D.; Zaragoza, O. and Ariño, J. (2019) Characterization of the atypical Ppz/Hal3 phosphatase system from the pathogenic fungus *Cryptococcus neoformans*. **Mol. Microbiol.** 111, 898-917
- 3.- A. Roque, S. Petrezselyova, A. Serra-Cardona, & J. Ariño. 2016. Genome-wide recruitment profiling of transcription factor Crz1 in response to high pH stress. **BMC Genomics** 17:662.
- 4.- Tatjer, L., Sacristán-Reviriego, A., Casado, C., ... & Ariño, J. (AC) (2016) The yeast Ptc1 protein phosphatase regulates a variety of cellular functions by targeting the Mkk1 kinase. **Genetics**. 202,141-56.-11 authors
- 5.- Canadell, D.; González, A.; Casado, C. & Ariño, J. (2015) Functional interactions between potassium and phosphate homeostasis in *Saccharomyces cerevisiae*. **Mol. Microbiol.** 95, 555–72. (*) *Editor's Choice Featured Articles*
- 6.- Serra, A.; Petrezsélyová, S., Canadell, D., Ramos, J. & Ariño, J. (2014) Co-regulated expression of Na⁺/phosphate Pho89 transporter and Ena1 Na⁺-ATPase allows their functional coupling under high pH stress. **Mol. Cell. Biol.** 34, 4420-4435.
- 7.- Molero, C.; Petrényi, K.; González, A.; Ariño, J. (2013) The *Schizosaccharomyces pombe* fusion gene *hal3* encodes three distinct activities. **Mol. Microbiol.**, 90:367-82.- 11 authors
- 8.- Barreto, L.; Canadell, D.; Valverde-Saubí, D.; Casamayor, A. & Ariño, J. (2012) The short-term response of yeast to potassium starvation. **Environ. Microbiol.**, 14, 3026-3042.
- 9.- Casamayor, A., Serrano, R.; Platara, M.; Casado, C. Ruiz, A. & Ariño, J. (2012) The role of the Snf1 kinase in the adaptive response of *Saccharomyces cerevisiae* to alkaline pH stress. **Biochemical Journal.** 444, 39-49.
- 10.- Casado, C.; González, A.; Platara, M.; Ruiz, A. & Ariño, J. (2011) The Role of The Protein Kinase-A Pathway in the Response to Alkaline pH Stress in Yeast. **Biochemical J.** 438, 523-533.



C.2. Research projects

BFU2017-82574-P	Understanding function and regulation of the atypical fungal Ppz1/Hal3 phosphatase system
IPs: J. Ariño /A. Casamayor	PLAN NACIONAL DE I+D+i
Jan 2018-Sept. 2021	140.000 € ongoing
BFU2014-54591-C2-1-P	Exploración de los mecanismos de homeostasis de cationes monovalentes como nueva diana antifúngica
IP: Joaquín Ariño	PLAN NACIONAL DE I+D+i
Jan 2015-Dec. 2017	190.000 € finished
BFU2011-30197-C03-01	Evaluación de la homeostasis iónica y de nutrientes: diferentes estrategias para un objetivo común
IP: Joaquín Ariño	PLAN NACIONAL DE I+D+i
Jan 2012-Dec. 2014	228.000 € finished
PIM2010EEI-00610	Diseño integral de levaduras tolerantes a ácido acético (INTACT)
IP: Joaquín Ariño	Programa Nacional de Internacionalización de la I+D (ERA-IB)
March 2011-Feb. 2014	149.000 € (specific UAB) finished
EUI2009-04147	Modelado de redes génicas y de proteínas relevantes en la homeostasis de cationes en levadura – Translucent 2 SysMo2 (EUROINVESTIGACIÓN 2009)
IP: Joaquín Ariño Consortium coordinator)	
April 2010-March 2013	305.000 € (specific UAB) finished
BFU2008-04188-C03-01	Vías de transducción de señal que controlan la homeostasis de iones y nutrientes en levaduras
IP: Joaquín Ariño (coordinador)	Plan Nacional I+D+I (MCIN)
Jan 2009-Dec. 2011	201.000 € finished

C.3. Contracts, technological or transfer merits

We have initiated very recently several collaborations to transfer to companies our experience in protein expression in yeast.

Title: Expression of secreted leghemoglobin in yeast
Company: ESPUÑA R&D
PI: J. Ariño
Amount: 29,484€ (IVA excl.) Starting/ending date: Sept-2019/April 2020
Other info: Exploratory investigation for production of leghemoglobin in *S. cerevisiae*

Title: Downscaling of the existing production process to identify critical points for future correction
Company: ANDRES PINTALUBA SA



PIs: J. Ariño (phases 1 a 3) and P. Ferrer (phases 4 a 8) both UAB staff
Amount: 40,029 € (IVA excl.) Starting/ending date: Sept-2019/March 2020
Other info: Bottom-up analysis of recombinant production of bacterial phytase in *P. pastoris*

Title: Novel systems for obtention of Leghemoglobin for meat analogs (INNOLEG)
Company: Esteban España, S.A & Coopecarn Girona SLU
PI: J. Ariño
Amount: 139,871 € (IVA excl.) Starting/ending date: Sept-2020/Sept 2022
Other info: Long-term investigation for production of leghemoglobin in *S. cerevisiae* & *P. pastoris*. It is a project co-funded by DARP and both companies.

C.4. Patents

None in this period.

C.5 Management of scientific activities / Grant evaluation

- Evaluator for ANEP and diverse CCAA for calls related to staff recruitment, research proposals and infrastructure proposals.
- Member of the evaluation commissions at the specific Spanish Ministry for BMC and BIO calls in 2000, 2003, 2007 and 2010.
- External evaluator for a large number of international funding calls, including Transverse Research Programs (France), Federal Office for Scientific, Technical and Cultural Affairs (Belgium), Concerted Action Program/Centres of Excellence (Belgium), Research Foundation - Flanders (Belgium), National Science Foundation (USA), Medical Research Council (UK), CONICYT (Argentina), Hungarian Scientific Research Fund (Hungary), Swiss National Science Foundation, Agence National de la Recherche (France), The Czech Science Foundation (Czech Rep.), and others.

C.6 Organization of Scientific Meetings

- 22nd IUBMB & 37th FEBS Congress, 4-9 September 2012 (Sevilla), Member of the Organizing Committee
- 1st FEBS3+ Joint Meeting of the French-Portuguese-Spanish Biochemical and Molecular Biology Societies" (Barcelona, 23-26 October 2017) - Member of the Organizing Committee

C.7 Awards and distinctions

- Distinction ICREA Academia 2009 (Generalitat de Catalunya)
- Award to Excellence in Research 2010, Universitat Autònoma de Barcelona.

C.8. Others

- Principal Investigator of the Generalitat de Catalunya SGR group from 1994 to 2017.
- Over 75 invited conferences in national and international meetings, workshops or courses.
- Member of the Editorial Board of "The Biochemical Journal" from 2005 to 2011, Microbial Cells (since 2013), and Intl. J. Molecular Sciences (since 2018).
- Director of the UAB Genomic Facility from 2002 a 2012. Currently Scientific Head of the Genomic section of the UAB Genomic and Bioinformatic Facility
- Director of the Department of Biochemistry & Molecular Biology at UAB from September 2014 to November 2020.